Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices

1369 Issued June 28, 1911.

U. S. DEPARTMENT OF AGRICULTURE.

OFFICE OF EXPERIMENT STATIONS—CIRCULAR 112.

A. C. TRUE, Director.

THE TRANSPORTATION COMPANIES AS FACTORS IN AGRICULTURAL EXTENSION.

BY

JOHN HAMILTON,

Farmers' Institute Specialist, Office of Experiment Stations.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1911.

OFFICE OF EXPERIMENT STATIONS.

A. C. True, Ph. D., Sc. D., Director.
E. W. Allen, Ph. D., Assistant Director and Editor of Experiment Station Record.
John Hamilton, B. S., M. S. A., Farmers' Institute Specialist.
J. M. Stedman, B. S., Assistant Farmers' Institute Specialist.

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Office of Experiment Stations,
Washington, D. C., April 29, 1911.

Sir: The manifestation of interest by the transportation companies of the country in the development of agriculture has recently become so pronounced and general as to attract the attention of all who are engaged in rural betterment. This interest has been shown chiefly in their providing and running special trains for the dissemination of agricultural information among farmers, and in their appointment of agricultural experts to positions in the management of the roads to give attention to the development of rural communities, and to the proper handling of agricultural products shipped over their routes.

Development in this direction is now so extended and the service has become such an important feature in agricultural extension that definite information respecting it is needed in order that it may be utilized still more widely and efficiently by the institutions engaged in agricultural extension work.

Inquiry into the general subject of the service of the transportation companies to agriculture was begun several years ago by Mr. John Hamilton, Farmers' Institute Specialist of this office, and in 1910 a quite extended investigation was conducted by him respecting the extent to which agricultural instruction trains were run, the cost of the service, and the results as viewed from the standpoint of the officers of these companies who accompanied the trains, and from that of the lecturers who were engaged in the instruction part of the work. One hundred and three of the leading railway corporations of the country were included in the correspondence, from all of whom replies were received, giving such information as they had relating to this subject.

The results of this investigation are presented in the manuscript herewith submitted, entitled "The Transportation Companies as Factors in Agricultural Extension," and I recommend that this report and the accompanying discussions be printed as Circular No. 112 of this office.

Respectfully,

A. C. True,
Director.

Hon. James Wilson,
Secretary of Agriculture.

CONTENTS.

	Page.
Introduction	5
Agricultural instruction trains	6
Method of operation	7
Results accomplished	8
Methods for securing such results	12
Tonnage supplied by agriculture	12
Increasing tonnage	13
Revenue from freight on agricultural products	13
Cooperation	14

THE TRANSPORTATION COMPANIES AS FACTORS IN AGRICULTURAL EXTENSION.

INTRODUCTION.

That many of the transportation companies are coming to appreciate agriculture as a source of income and are giving special attention to its development is shown by investigations recently made by the farmers' institute division of the Office of Experiment Stations of the Department of Agriculture.

In conducting these investigations inquiries were sent to over 100 railroad corporations of the United States and Canada requesting information as to what each company has done, if anything, in assisting agriculture. Replies were received from all who were addressed. These replies show that of the 103 companies sending in reports 52 have been active to a greater or less extent in rendering assistance in an educational way to the agricultural interests of the districts which their lines traverse.

The following list of items taken from these reports shows some of the directions in which the efforts of the companies are being extended in aid of agriculture:

1. Promoting the colonization of agricultural lands.
2. Encouraging and assisting farmers in planting diversified crops.
3. Employing agricultural experts to instruct farmers with respect to the selection of seed, the planting, cultivating, and preparation of crops for market.
4. Furnishing names of agricultural people to the National Department of Agriculture, to the State departments of agriculture, and to the State experiment stations for use in distributing agricultural literature.
5. Organizing and conducting demonstration farms.
6. Furnishing speakers for farmers' institutes.
7. Sending out good-road, seed, soil, and better-farming special trains.
8. Equipping exhibit cars with agricultural products and sending them over their lines.
9. Defraying the expenses of lecturers to farmers' institute meetings.
10. Preparing and printing agricultural bulletins of information and distributing them among farmers.
11. Advertising agricultural meetings and providing assembly halls for the accommodation of audiences.
12. Furnishing free of cost the use of farm lands to agricultural colleges and experiment stations for demonstration and experiment work.
13. Providing special rates and free transportation to farmers' institute workers.

14. Giving free transportation and reduced rates to farmers attending conventions and annual meetings at State agricultural colleges and experiment stations.
15. Cooperating with the agricultural colleges and experiment stations in their educational work by granting special rates to students.
16. Organizing agricultural departments in their boards of railroad management.
17. Furnishing pure-bred stock to farmers for breeding purposes.
18. Offering prizes for the best-managed farms.
19. Collecting data respecting and furnishing reports of the condition of crops along their lines.
20. Providing refrigerator cars for local trade.
21. Sending out experts to give instruction respecting the picking and packing of fruits and vegetables for market.
22. Corresponding with agricultural commission men and giving them the names and addresses of farmers, fruit and truck growers along their lines.
23. Furnishing daily, through their local agents, telegraphic reports to farmers respecting the condition of the markets.
24. Providing soliciting agents for the sale of agricultural products in market and terminal centers.
25. Furnishing assistance in the selling of produce.
26. Warning producers against irresponsible commission men.
27. Testing soils in various localities for the purpose of advising settlers as to proper locations for growing special crops.
28. Assisting farmers to secure the best markets for their special lines of produce.
29. Informing farmers as to the customs and requirements of the various markets.
30. Publishing books and circulars of information showing the character of the lands along their roads and their adaptability to various crops.
31. Advertising lands open for sale to settlers.
32. Purchasing and dividing up large ranches into smaller farms and disposing of them to home seekers.
33. Organizing poultry, dairy, horticultural, and truck-growers' associations.
34. Organizing companies for erecting canning factories and creameries.
35. Equipping cars with agricultural exhibits and specimens of seeds and grains, sending them over their lines, and distributing samples to farmers for testing.
36. Aiding in securing a supply of agricultural laborers and transporting them at reduced rates.
37. Equipping and conducting experiment farms.
38. Furnishing pure seed and providing inoculating material for use in growing alfalfa, cowpeas, and clover.
39. Giving information respecting and rendering direct assistance in the drainage of swamp lands.

AGRICULTURAL INSTRUCTION TRAINS.

A special investigation into the extent of the operation of agricultural instruction trains in the United States just completed reveals the fact that 52 of the leading railroad companies had engaged in this form of disseminating agricultural information during the year ended June 30, 1910. The number of cars employed aggregated 239, an average of 4.6 cars per train. The 52 trains traversed altogether during the year 40,771 miles of track and occupied in doing so the equivalent of 589 days for a single train. One thousand seven hundred and ninety-three stops, ranging from 40 minutes to 2 days each, were made, during which lectures upon agriculture and domestic

science topics were delivered, demonstrations made, and exhibits of animals, charts, and agricultural products.

The cost of operating the trains per day was reported by 31 of the companies and averaged $95.80 each, aggregating for the 338 days during which these trains were run $32,383.60. If the trains run by the companies not reporting the cost equaled this average per day, the expense for the whole 589 days would reach a total of $56,429.43. Forty-three of the trains reported the number of lecturers carried at 346. These lecturers contributed altogether 3,609 days of service, an average of about 10.43 days for each lecturer, with 8 lecturers to each train. If the 9 other trains that ran, and occupied 87 days in the aggregate, had the same number of lecturers, 8 per train, it would add 696 days, making a total of 4,305 days, or a period of instruction equivalent to 14.35 years of 300 days each. If the lecturers employed received an average salary of $2,500 per year, the amount would be $35,000. This sum added to the cost of running the trains would make the aggregate expense for the year $91,429.43.

Reports received from 26 of the trains that were run show an attendance of 189,645. If the other 26 trains whose attendance was not reported equaled this number, it would make the total of persons reached during the year 379,290.

METHOD OF OPERATION.

The method pursued in operating these trains has been for each railroad company to provide at its own expense a locomotive, baggage car, one or two coaches fitted up for lecture purposes, and a Pullman car provided with dining room and sleeping accommodations for the lecture force. The lecturers are usually furnished by the agricultural college or agricultural experiment station of the State in which the train is run. Not infrequently this corps of teachers is supplemented by specialists from the National and State Departments of Agriculture.

Each train is supplied with a quantity of illustrative material. If the instruction to be given is along dairy lines, then dairy cattle frequently form a part of the equipment, together with the apparatus used in dairy processes. If poultry, swine, field crop, or fruit is the principal feature, then the illustrative material is along these specific lines.

The train is advertised in advance by means of posters and newspaper notices giving the points where it will stop, the hour at which it will arrive at a given station, the length of time it will remain, the names of the lecturers who will give instruction, and the topics that will be discussed. Circulars giving this information are placed in the hands of the local agents of the railroad company, with instructions to distribute them throughout the community. Each train, in

addition to the regular force of railroad employees—engineer, firemen, brakemen, conductor, and caterer—is accompanied by a railroad official who is directly in charge of the division of the road on which the train is run.

When the train arrives at a station the farmers are invited into the lecture coaches and are addressed by the experts in 30 or 40 minute talks. The teaching is accompanied by charts or by printed circulars referring to authorities responsible for the information. Usually this printed matter is made up of statements of the results of experiments conducted by the State experiment stations. Literature also, consisting of bulletins and circulars by other experiment stations and departments of agriculture, is distributed among those who are interested, and information is given as to where additional facts relating to particular subjects can be secured.

Although the utilization of instruction trains in the dissemination of agricultural information is comparatively recent in the United States, the movement has developed until now a majority of the leading railroad companies are engaged in this form of extension work.

RESULTS ACCOMPLISHED.

It is interesting to note how soon important results valuable to the railroad companies are accomplished through extending a comparatively small amount of assistance to agricultural people along their lines. One company reports that for 8 years it has been engaged in organizing farmers' associations in the districts through which it runs, until now there is hardly a town of 300 people on that line which has not an active association of farmers for the promotion of diversified crops. The result has been that the road in 1904 hauled in about 90 days 3,500 cars of truck and fruit as against almost none 5 or 6 years before.

Another company states that through its efforts not only has there been a large increase in the production of staple crops along its lines, but in fruit and truck growing also there has been an increase of fully 100 per cent in the last five years. In the year 1905 it hauled 1,500 cars of fruit and truck.

Another company says: "The result of the work has been most satisfactory, the shipments being increased from almost nothing in the way of fruits and vegetables to many hundreds of cars annually. The increase of tonnage in 1905 was between 1,000 and 2,000 cars in potatoes, melons, and vegetables alone." Another company began a few years ago by organizing associations of farmers in sections specially adapted to the growth of certain crops. In one locality adapted to the growth of strawberries the company agreed to furnish plants and send an expert to instruct the farmers how to

plant and grow this fruit. Eighty-six acres were put out the first year, and the yield was 9 carloads. In 1904 about 1,000 acres were planted and 50 carloads were shipped; the next year 130 carloads, and in 1906 between 250 and 300 carloads.

One company publishes for distribution among its patrons a monthly magazine which contains accurate information as to the character and condition of the markets in the several cities and gives the rates of freight from various points along its lines to these cities. This railroad has three industrial agents paid by the company who are aided by two assistants, all of whom are experts in agricultural matters, who devote their entire time to the development of agriculture along the lines of the road, giving information to farmers as to crops that are adapted to the various soils and the best methods for their cultivation, and keeping them informed as to where suitable markets for their products can be found.

Another company has organized 35 farmers' institute and truck growers' associations with an aggregate membership of 5,000 persons. This company maintains correspondence with these associations and notifies them promptly of changes in the markets and gives advice as to the localities where profitable markets exist. Several companies publish and distribute bulletins of information upon special subjects, as tomato growing, cantaloup farming, potato culture, dairying, the growing of apples, peaches, pears, alfalfa, etc. Their agents meet with the farmers and give them instruction as to the methods of planting, cultivating, harvesting, and marketing their crops.

One company offered $100 scholarships, one for each of 45 counties through which its lines run, to men or boys over 16 years of age who would exhibit the 10 best ears of corn at the county corn show, the $100 to be used in paying for a scholarship at the short winter course at the agricultural college of the State. Another company offered a $500 prize to the farmer in the State, along the line traversed by the railroad, whose farm showed superiority over all others in management and profitable production.

Eight companies have established 13 experiment and demonstration farms to show the capability of the soils and climate of the districts where they are located. On these farms crops adapted to local conditions are planted where neighboring farmers and prospective settlers may see growing the varieties of crops that the country can produce. One of these farms was located on swamp land in a district where drainage was necessary before the soil could be utilized. The first year the farm grew 635 bushels of onions on three-fourths of an acre; 44,000 celery plants upon 2 acres; 540 bushels of potatoes upon 3 acres. The wheat sown yielded 36 bushels per acre, and the barley 47.

A railroad company five years ago selected a farm on sandy land generally regarded as worthless for agricultural purposes, and last year established a second farm upon similar soil. Last summer there were grown on these farms over 300 different kinds of plants—vegetables and fruits. The success of the experiment is evidenced by the large number of truck farms that have been established along the line of the road since the first demonstration farm was operated, and the large amount of freight traffic that has resulted. This same company established a similar farm in another State on what was considered to be exhausted land. Its purpose is to demonstrate here the practicability of growing profitable crops on this so-called worn-out soil and thus induce settlers to occupy these lands and begin the cultivation of fruits and vegetables for the city market. This company also has established a forestry department in its management and has planted out many thousands of trees, principally locust, and is caring for them in a scientific manner with a view to supplying timber for ties, posts, and other uses.

Another company in cooperation with the agricultural authorities of the State through which its lines run is demonstrating the value of the semi-arid lands for agricultural purposes. Seven of these demonstration farms are now in operation and others are projected. Another company is experimenting with alfalfa on lands where the rainfall is far below the normal amount; while still another is demonstrating the value of commercial fertilizers in growing strawberries, potatoes, hay, corn, cowpeas, sugar beets, broom corn, alsike and red clover, oats, mangel-wurzels, turnips, etc. This farm has been in operation several years and is a pronounced success.

A road in the South that has taken great interest in the development of agriculture has organized fruit growers' and truckers' associations at different points along its lines, and issues printed circulars and bulletins of information respecting the agricultural advantages of the several localities through which the road passes. This company employs experts to teach the trucker and farmer and to oversee and assist him in his work. Some of these experts have had training in the agricultural colleges and experiment stations of the country, and others are commercial men of years of experience who aid in marketing the products, and assist by teaching the fruit growers and truckers how to grade, pack, and prepare their products so as to suit the peculiar demands of the various cities. The company states that it has a soliciting freight agent in every northern city of any magnitude. Each agent posts the fruit growers' associations and individual growers daily during the shipping season as to the exact condition of the market in the city where he is located. On the arrival of the cars he advises concerning the condition of the contents, and many times gives the prices which were obtained for

the goods, before the consignee reports the arrival of the car. Another important service rendered by this company is their system of "diverting" shipments "en route" at the direction of the consignor. If a car, for instance, leaves for the North it is shipped open or sent under charge of the shipper until it reaches the first great distributing point. At that point instructions are forwarded to the railroad company to send the goods to a particular city. Later reports from the railroad company's agent may disclose the fact that there is a glut in the market at that point, whereupon the consignor telegraphs the company to divert the car to another market reported to be less congested. All of this information and these directions are transmitted by the company free of charge, and special effort is made to have the instructions carried out promptly and the shipper notified of the arrival of the goods at their final destination. By thus watching and caring for the shipments after they have started, business has been made more profitable for the company and the shipper is kept in close touch always with the best markets available, and there are consequently fewer chances that his work shall go for nothing through loss from the car reaching a glutted market.

Another southern company each season before the shipments begin has an estimate made of the yield in each locality of the various products, and this information is distributed to shippers and to dealers, giving the names and post-office addresses of the men who have products to ship and the names and post-office addresses of the various commission merchants who have been found to be reliable in the various States.

A schedule of the rates from all stations on this road to all points east and west, north and south, on products in carload lots is published and forwarded to the shippers. In other words, the railroad company acts as the agent of the shipper in securing a market, and as the agent of the buyer in securing the goods. In acting in this capacity the company agrees to give reliable information and serve the customer with the greatest possible care and dispatch. The industrial agent of the road expresses the attitude of the company by stating that it "tries to use methods in promoting the success of the various farmers along the line just the same as if they were tenants on a big plantation and the company its manager and responsible for their success."

Another company has given attention to the matter of diversification of crops, and is cooperating with Government experts in the endeavor to exterminate crop pests and to secure diversification, and is also cooperating with the different agricultural and mechanical colleges in the States through which it runs by aiding them in holding meetings for farmers in the different communities. This company ran a good-roads train on its line for two months at a cost of several thousand dollars, and has about completed arrangements for having

a general soil survey made of the lands contiguous to its system so that farmers may work more intelligently along agricultural and horticultural lines.

It is worthy of note that all of the companies that have thus far been active, and directly engaged in assisting agricultural people, express themselves as satisfied with the experiment so far as it has gone, and declare their purpose to continue their aid and extend their efforts in this direction as the way is made clear.

METHODS FOR SECURING SUCH RESULTS.

In order that a railway company may profit to the fullest extent from the agriculture contiguous to its lines, it has now become clear that it must do more than construct tracks, run trains, and carry freight. It must come in a helpful way into direct personal contact with the farmers. The policy of standing aloof and regarding country people as aliens is disastrous. A spirit of antagonism is created by this attitude that could easily be avoided by means of personal acquaintance with farming people on the part of the railroad companies, and through well-organized practical assistance contributed for the betterment of agricultural conditions.

Farmers to prosper must grow articles suited to the tastes of fastidious customers, and they must know how to grow such crops in abundance. They need to be shown how to prepare their produce for market so that it will reach the consumer in attractive form, and in the best possible condition. They need information respecting markets for their various products, and the best methods of reaching their customers. The average farmer is not a merchant; he is a producer, and consequently must have assistance in selling if he is to realize the greatest possible profit for his labor. This aid the transportation company is in position to render, and in doing so it will not only increase the farmer's capacity and inclination to produce and thereby enrich him, but will at the same time add to the volume of its own business as a carrier of freight, and correspondingly increase the net profits of the road.

TONNAGE SUPPLIED BY AGRICULTURE.

The relation between farming and cheap, rapid, and safe transportation is most intimate. The farmer must have an outlet for his crops. The transportation company on the other hand is dependent upon the prosperity of business in the regions through which it passes for profitable freight. Farms make freight. The reports of the railroad companies of the United States for the year ended June 30, 1909, show that of the total amount of freight carried during that year 73,683,720 tons were direct products of agriculture; 20,593,352 tons were animals and other products; 97,104,700 tons were products of forests; making a total of 191,381,772 tons of freight carried by

the transportation companies of the United States that year furnished by these three divisions of agriculture.[1]

INCREASING TONNAGE.

The amount of improved land in the United States as given in the census report of 1899 was 414,498,487 acres. The portion of this actually in crops that year is stated to have been 389,734,591 acres. The value of the crops was $2,888,839,638. The value of the live stock was $3,196,381,818, and the total value of all farm products was $4,739,118,752. The annual production per acre averaged less than $10 ($9.97) for the land actually in crops, and the average per acre for the entire farm, embracing crops not used in the maintenance of stock, was only $4.47.

If production could be increased so as to double the present crops it would add to the tonnage of the transportation companies in barley, buckwheat, corn, Kafir corn, oats, rice, rye, and wheat alone 112,911,398 tons annually, which at the present average rates of freight, $1.90 per ton, would increase the receipts of these companies $214,531,466.20 each year. As the fixed charges of the companies are practically constant and are already met out of present production, this large increase would be almost wholly profit.

REVENUE FROM FREIGHT ON AGRICULTURAL PRODUCTS.

The total receipts for freight carried during the year ended June 30, 1909, were $1,678,058,645, or an average of $1.90 per ton.[2] While this average is below the amount actually charged for carrying agricultural products, it may nevertheless be used in approximating the revenues derived by the railroad companies from agricultural sources. At this rate the 191,381,772 tons of agricultural products carried brought in a revenue to the railroad companies of $363,625,366.80, or about 21.6 per cent of the entire receipts of the companies for freight carried in 1909. The actual amount received for the carriage of agricultural products, however, greatly exceeded this sum, for, as has been intimated, the rate upon agricultural products with the exception of grain was much greater per ton per mile than the average charge per ton upon freight of every kind. The average receipts per ton per mile for all kinds of freight in 1909 were 0.763 of a cent, or a little more than 7.6 mills.[3] The average, however, upon agricultural products was, for hay, 1.025 cents per ton per mile; cotton, 1.781; live stock, 1.166; dressed meats, 0.905; lumber, 0.770; grain, 0.611.[4] Although the products of mines furnished the largest amount of ton-

[1] Statistics of Railways, 1909, pp. 59, 66.

[2] This computation is upon 881,334,355 tons of freight carried in 1909 (see Statistics of Railways in the United States, 1909, p. 59) and $1,678,058,645 revenue (see p. 552, above report), less $3,774,472, amount received for which no corresponding tonnage was reported.

[3] Statistics of Railways in the United States, 1909, p. 60. Based upon traffic of practically all the mileage.

[4] Statistics of Railways in the United States, 1909, p. 67. Based upon traffic of about one-half of the mileage.

nage of any single interest (459,560,732 tons in 1909), yet the cash received from the carriage of agricultural products is probably fully as great as that from mines. The average receipts per ton per mile from freight carried in carload lots for grain, hay, cotton, live stock, dressed meats, and lumber is 0.824 of a cent; that for anthracite and bituminous coal is 0.533, or only about two-thirds as much.

The railroad companies therefore are dependent for a large portion of their most profitable traffic upon the products of the farms, and consequently are directly interested in the development of this industry from a purely business standpoint, for it not only provides freight for transportation to the great consuming centers, but requires for its support merchandise, coal, building materials, implements, and other supplies, thus furnishing a return load to the transportation company, and, likewise, through the increase of population due to prosperity in the rural districts, creates additional passenger travel as well.

COOPERATION.

These two great interests, agriculture and transportation, are therefore interdependent. Injury to one is injury to both. For their highest development and mutual benefit cooperation is a necessity. The railroad needs freight. The farmer needs transportation. Consequently what the company does to increase production along its lines it is doing for itself; and the farmer in like manner is directly interested in everything that tends to render transportation more serviceable in getting his products promptly into market and in good condition.

The agricultural train, the agricultural scientist in railroad employ, the circular of agricultural information, the demonstration farm, and the other activities recently introduced into their systems and operated by the railroad companies are a recognition of this interdependence and constitute an effort to improve agriculture that already has begun to show beneficial effects. What the companies have done shows appreciation of agriculture as a permanent and constantly increasing source of revenue, and the success already achieved is encouragement for extended efforts on the part of the companies in the direction of the development of agriculture in this country as opportunity offers and as the needs of the country require. Their vast resources and special facilities for directing intercourse with agricultural people everywhere afford advantages for aiding in rural betterment not possessed by any other agency. Now, that cooperation has not only been shown to be possible but has been begun so auspiciously, its expansion to include all of the transportation companies of the country as well as many other lines of effort for agricultural development would seem to be limited only by ability to secure a sufficient force of capable men to carry the projects into effect.